Title (en)

SCALING TOOL

Title (de)

SKALIERUNGSWERKZEUG

Title (fr)

OUTIL DE MISE À L'ÉCHELLE

Publication

EP 3525053 A1 20190814 (EN)

Application

EP 18000132 A 20180212

Priority

EP 18000132 A 20180212

Abstract (en)

The present application generally pertains to scaling of a production process to produce a chemical, pharmaceutical and/or biotechnological product and/or of a production state of a respective production equipment. Particularly, there is provided a computer-implemented method of scaling a production process to produce a chemical, pharmaceutical and/or biotechnological product, the scaling being from a source scale to a target scale, wherein the production process is defined by a plurality of steps specified by one or more process parameters controlling an execution of the production process, the method comprising: (a) retrieving: parameter evolution information that describes the time evolution of the process parameter(s); a plurality of recipe templates, wherein a recipe comprises the plurality of steps defining the production process, and wherein a recipe template is a recipe in which at least one of the process parameters specifying the plurality of steps is a parameter being variable and having no predetermined value at the outset; (b) receiving: a source setup specification of a source setup to be used for executing the production process at the source scale, the source setup specification comprising the source scale value; a target setup specification of a target setup to be used for executing the production process at the target scale, the target setup specification comprising the target scale value; a source recipe defining the production process at the source scale; at least one acceptability function defining conditions for the values of the process parameter(s) at the source scale and/or at the target scale; (c) simulating the execution of the production process at the source scale using the source setup specification, the source recipe and the parameter evolution information; (d) determining, from the simulation, one or more source trajectories for the process parameter(s), wherein a trajectory corresponds to a time-based profile of values recordable during the simulated execution of the production process; (e) performing a target determination step comprising: selecting a recipe template pertinent to the production process out of the plurality of recipe templates; providing an input value for the at least one variable parameter in the selected recipe template; simulating the execution of the production process at the target scale using the target setup specification, the selected recipe template, the input value for the at least one variable parameter and the parameter evolution information; determining, from the simulation, one or more target trajectories for the process parameters; comparing the source trajectory(ies) and the target trajectory(ies); computing, based on the comparison and on the at least one acceptability function, an acceptability score for the selected recipe template; computing an optimal value for the at least one variable parameter in the selected recipe template by optimising the acceptability score and/or computing an acceptable range for the at least one variable parameter, wherein values within the acceptable range yield an acceptability score above a specific threshold; (f) if there is at least another pertinent recipe template, repeating the target determination step for at least another pertinent recipe template; (g) selecting at least one of the plurality of recipe templates and corresponding computed value(s) for variable parameter(s) as target recipe based on the acceptability scores computed for one or more recipe templates.

IPC 8 full level

G05B 23/02 (2006.01); **G05B 19/418** (2006.01)

CPC (source: EP KR US)

C12M 41/48 (2013.01 - EP); **C12Q 3/00** (2013.01 - US); **G05B 19/4188** (2013.01 - EP KR); **G05B 19/41885** (2013.01 - KR US); **G05B 23/021** (2013.01 - EP KR); **G06Q 10/06313** (2013.01 - US); **G06Q 50/04** (2013.01 - US); G05B 2219/32287 (2013.01 - US); G05B 2219/32301 (2013.01 - US)

Citation (search report)

- [A] WO 0180055 A2 20011025 - HONEYWELL INT INC [US]
- [A] WO 2017199006 A1 20171123 - TAP BIOSYSTEMS (PHC) LTD [GB]
- [A] WO 2007017738 A2 20070215 - PFIZER PROD INC [US], et al

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Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 3525053 A1 20190814; **EP 3525053 B1 20200422**; CN 111615674 A 20200901; CN 111615674 B 20210820; EP 3582053 A1 20191218; EP 3582053 B1 20220330; KR 102408910 B1 20220615; KR 20200105904 A 20200909; SG 11202005114S A 20200629; US 11429911 B2 20220830; US 11687856 B2 20230627; US 2020349487 A1 20201105; US 2022343242 A1 20221027; WO 2019154700 A1 20190815

DOCDB simple family (application)

EP 18000132 A 20180212; CN 201980008894 A 20190131; EP 19185093 A 20180212; EP 2019052312 W 20190131; KR 20207022590 A 20190131; SG 11202005114S A 20190131; US 201916962550 A 20190131; US 202217858923 A 20220706